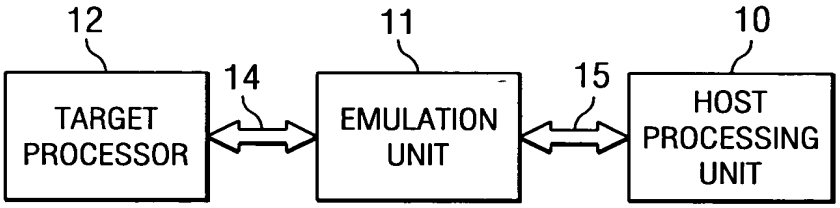
12
11
10
14
15
TARGET PROCESSOR
EMULATION UNIT
HOST PROCESSING UNIT

FIG. 1A

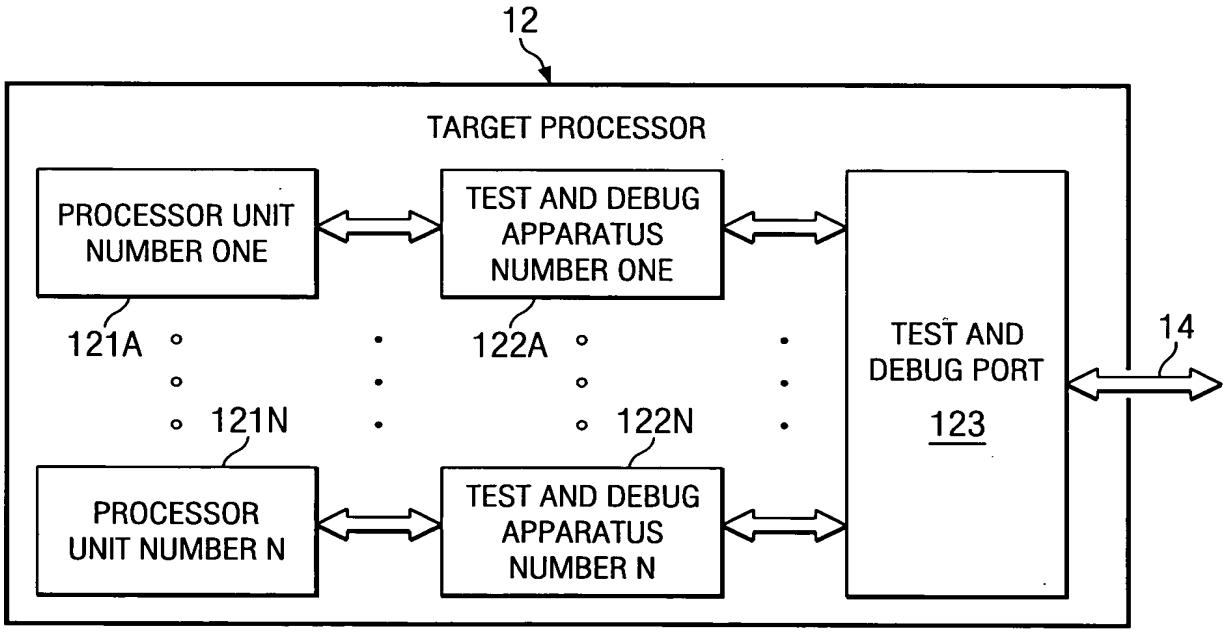
12
TARGET PROCESSOR
PROCESSOR UNIT NUMBER ONE
TEST AND DEBUG APPARATUS NUMBER ONE
121A
122A
TEST AND DEBUG PORT
123
14
121N
122N
PROCESSOR UNIT NUMBER N
TEST AND DEBUG APPARATUS NUMBER N

FIG. 1B

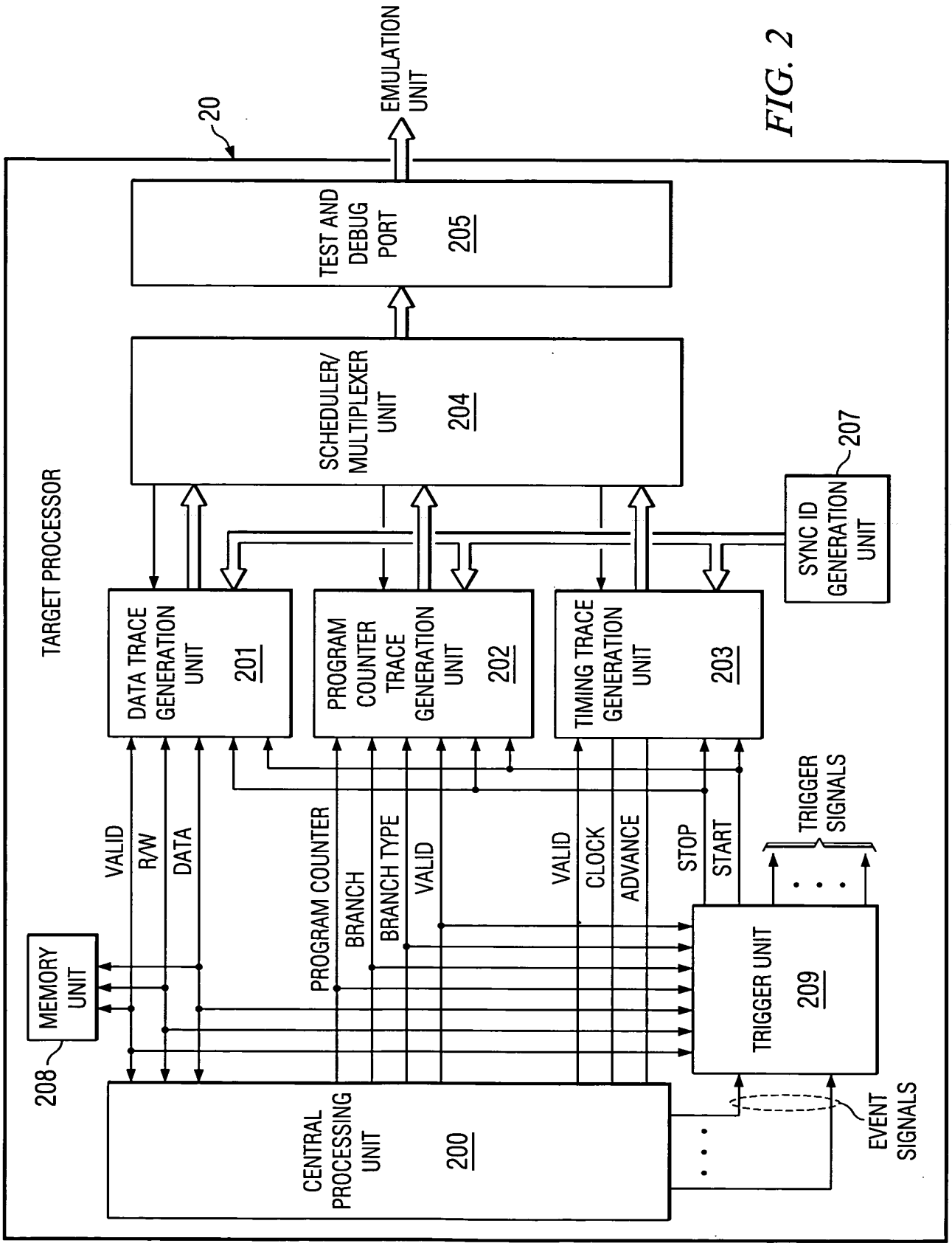
20
EMULATION UNIT
TEST AND DEBUG PORT 205
SCHEDULER/ MULTIPLEXER UNIT 204
TARGET PROCESSOR
SYNC ID GENERATION UNIT 207
DATA TRACE GENERATION UNIT 201
PROGRAM COUNTER TRACE GENERATION UNIT 202
TIMING TRACE GENERATION UNIT 203
VALID
R/W
DATA
PROGRAM COUNTER
BRANCH
BRANCH TYPE
VALID
VALID
CLOCK
ADVANCE
STOP
START
TRIGGER SIGNALS
MEMORY UNIT
208
TRIGGER UNIT 209
CENTRAL PROCESSING UNIT 200
EVENT SIGNALS

FIG. 2

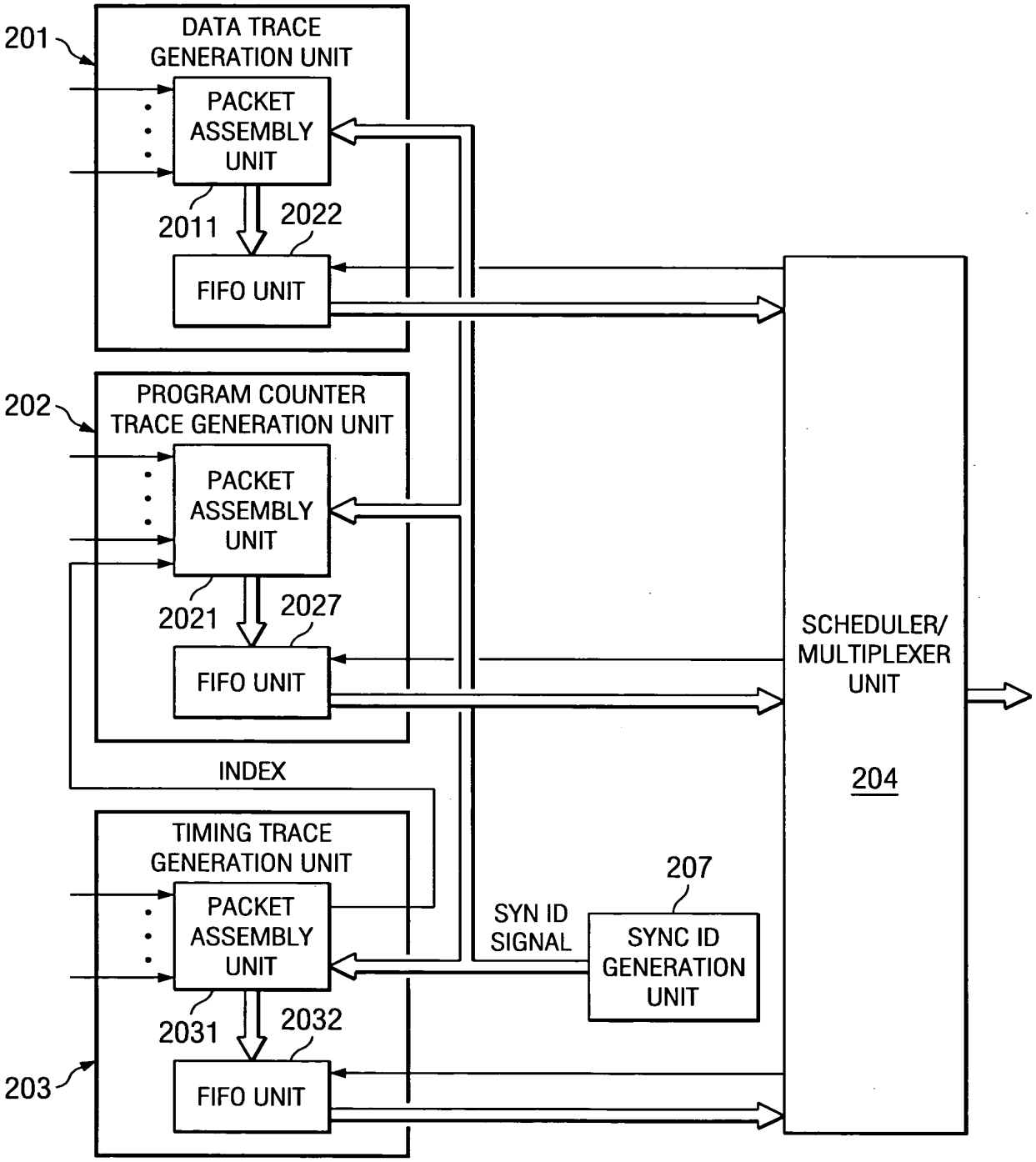
201
DATA TRACE GENERATION UNIT
PACKET ASSEMBLY UNIT
2011
2022
FIFO UNIT
202
PROGRAM COUNTER TRACE GENERATION UNIT
PACKET ASSEMBLY UNIT
2021
2027
FIFO UNIT
INDEX
TIMING TRACE GENERATION UNIT
PACKET ASSEMBLY UNIT
2031
2032
FIFO UNIT
203
207
SYN ID SIGNAL
SYNC ID GENERATION UNIT
SCHEDULER/ MULTIPLEXER UNIT
204

FIG. 3

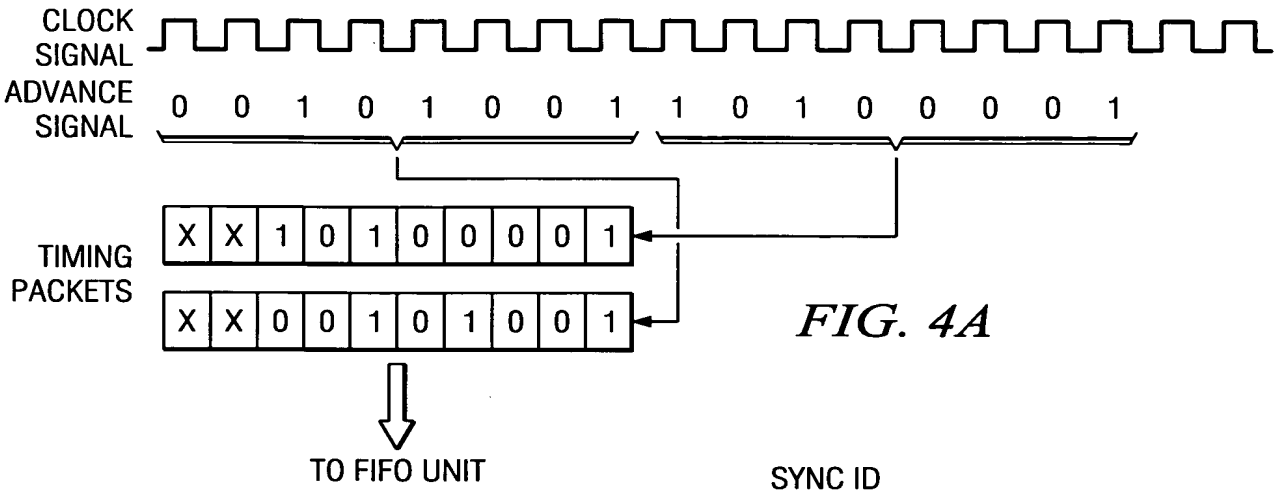

FIG. 4A

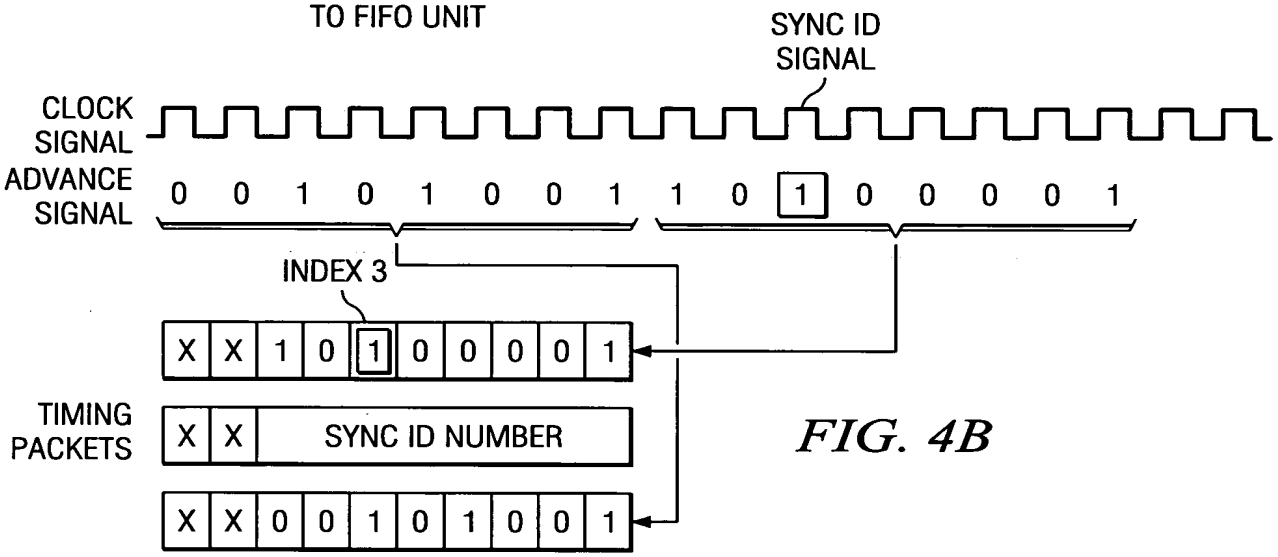

FIG. 4B

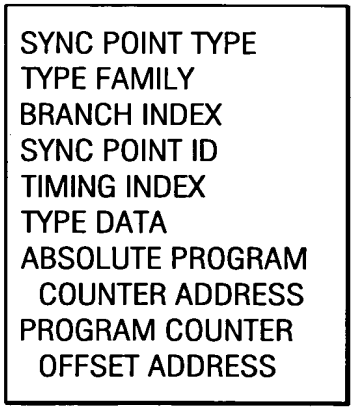

FIG. 5

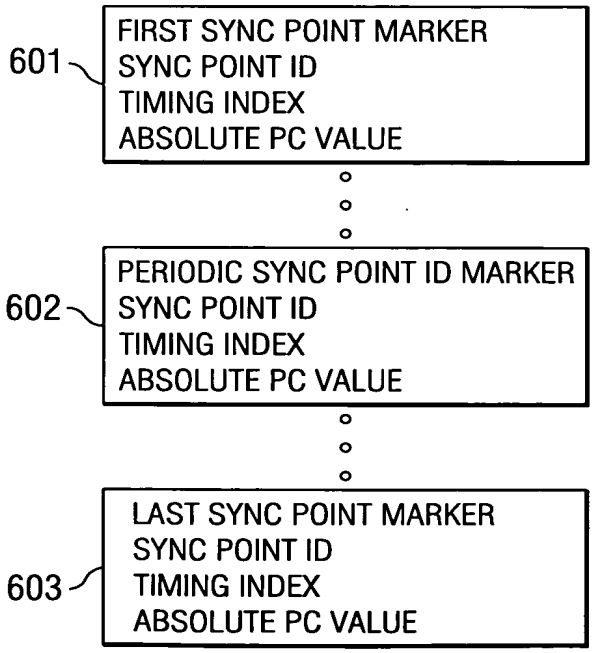

FIG. 6A

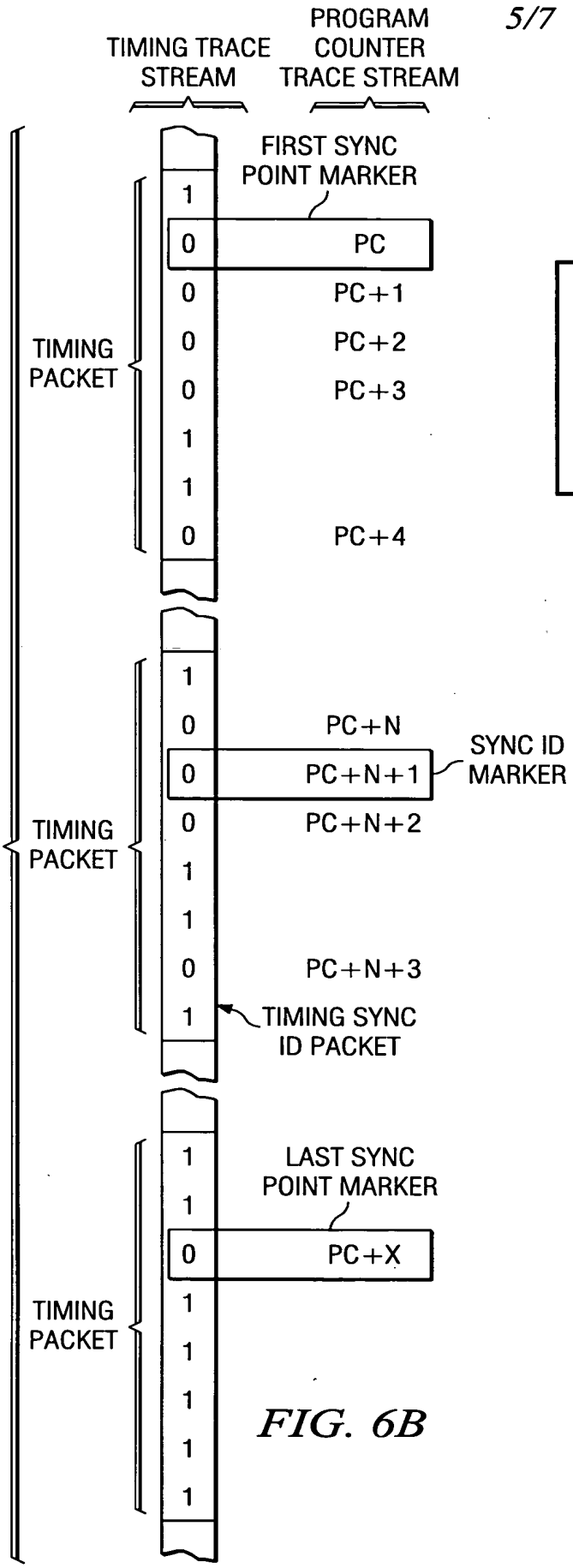

FIG. 6B

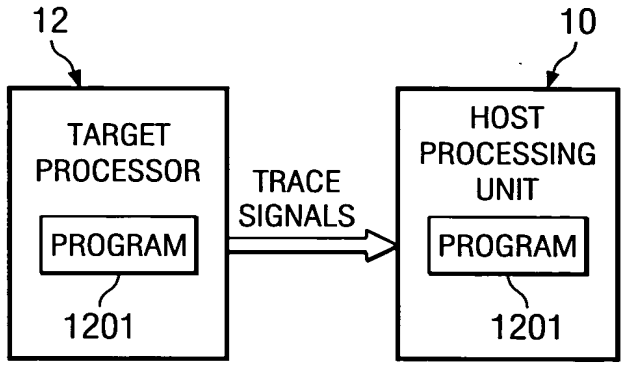

FIG. 7A

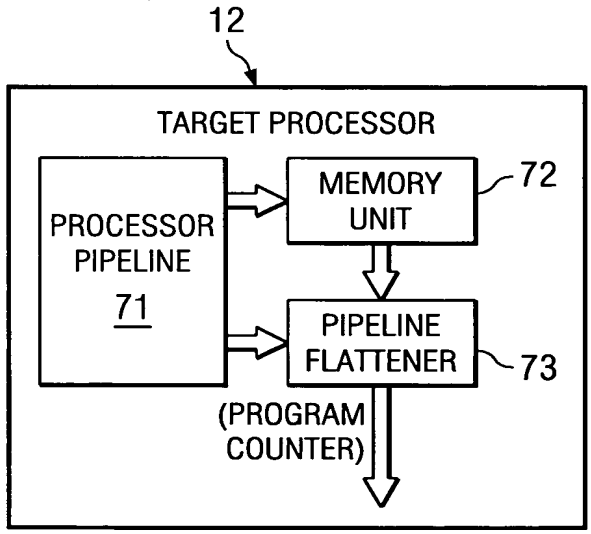

FIG. 7B

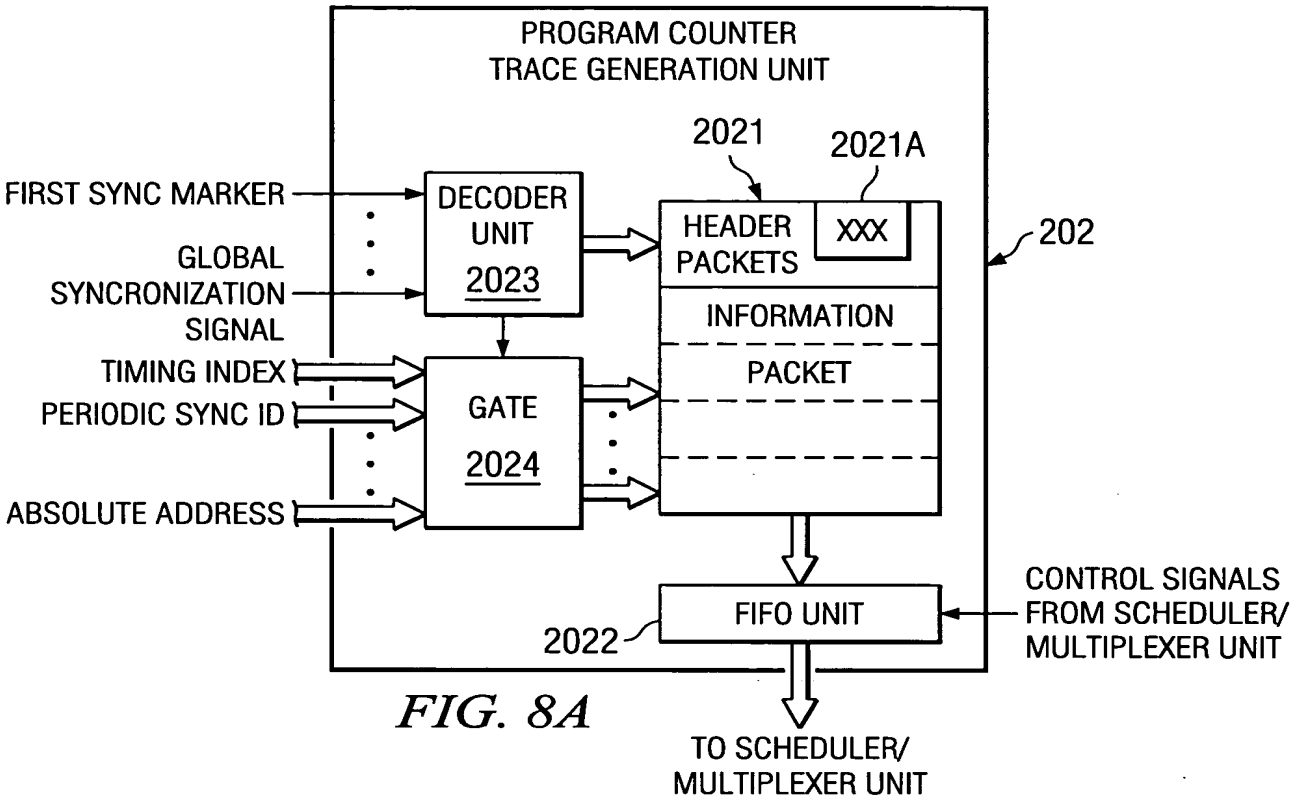
PROGRAM COUNTER
TRACE GENERATION UNIT
2021
2021A
FIRST SYNC MARKER
GLOBAL
SYNCRONIZATION
SIGNAL
TIMING INDEX
PERIODIC SYNC ID
ABSOLUTE ADDRESS
DECODER
UNIT
2023
GATE
2024
HEADER
PACKETS
XXX
INFORMATION
PACKET
202
FIFO UNIT
2022
CONTROL SIGNALS
FROM SCHEDULER/
MULTIPLEXER UNIT
TO SCHEDULER/
MULTIPLEXER UNIT

FIG. 8A

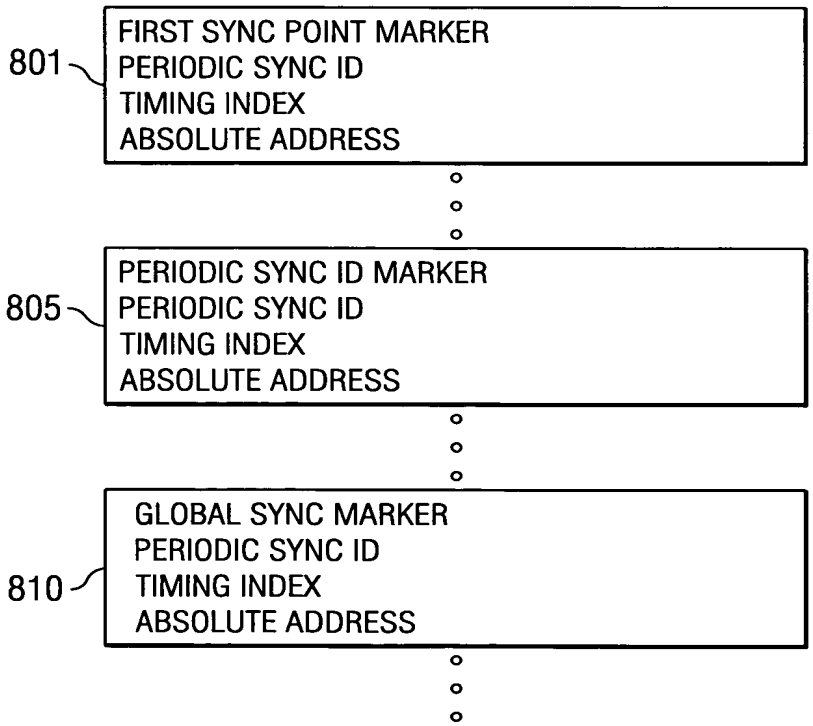
801
FIRST SYNC POINT MARKER
PERIODIC SYNC ID
TIMING INDEX
ABSOLUTE ADDRESS
805
PERIODIC SYNC ID MARKER
PERIODIC SYNC ID
TIMING INDEX
ABSOLUTE ADDRESS
810
GLOBAL SYNC MARKER
PERIODIC SYNC ID
TIMING INDEX
ABSOLUTE ADDRESS

FIG. 8B

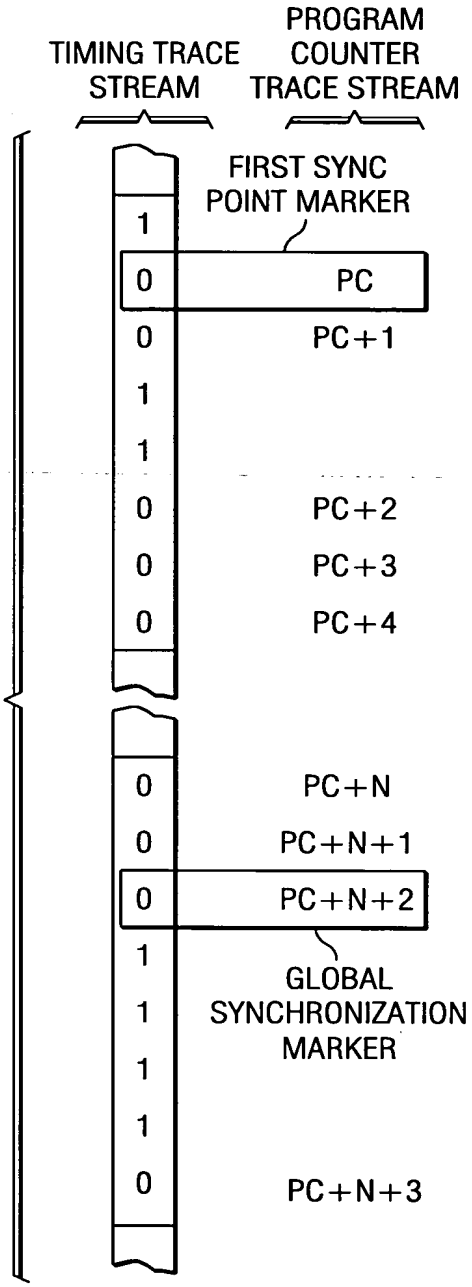
TIMING TRACE STREAM
PROGRAM COUNTER TRACE STREAM
FIRST SYNC POINT MARKER
1
0
PC
0
PC+1
1
1
0
PC+2
0
PC+3
0
PC+4
0
PC+N
0
PC+N+1
0
PC+N+2
1
1
1
1
0
GLOBAL SYNCHRONIZATION MARKER
PC+N+3

FIG. 8C